

## Interview Summary

Application No.

10/765,126

Applicant(s)

JEONG ET AL.

Examiner

Sanh D. Phu

Art Unit

2618

All participants (applicant, applicant's representative, PTO personnel):

(1) Sanh D. Phu.

(3) \_\_\_\_\_

(2) Mike Parker.

(4) \_\_\_\_\_

Date of Interview: 11 April 2007.

Type: a) ☒ Telephonic b) ☐ Video Conference  
c) ☐ Personal [copy given to: 1) ☐ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.

If Yes, brief description: \_\_\_\_\_

Claim(s) discussed: 1-21.

Identification of prior art discussed: none.

Agreement with respect to the claims f) ☒ was reached. g) ☐ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: See Continuation Sheet.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

SANH D. PHU  
PATENT EXAMINER

 4/11/07

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Examiner's signature, if required

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Authorization for this examiner's amendment was given in a telephone interview with Attorney Michael Parker on 04/11/07.

The application has been amended as follows:

**IN THE CLAIMS:**

Claims 1-21 are amended as follows:

1. (Currently amended) A multi-sector in-building repeater in communication with a base station, the multi-sector in-building repeater comprising:

a master transmitting unit for receiving multi-sector signals of a carrier frequency from the base station, mixing the multi-sector signals with different transmission intermediate frequency signals, and outputting the mixed multi-sector signals to a same transmission line;

a plurality of slave transmitting units, each of which receives the mixed multi-sector signals, for extracting from the mixed multi-sector signals sector signals assigned to the multi-sector signals from the [master transmitting unit] transmission line, converting the extracted sector signals into high frequency signals, and transmitting [converted] the high frequency signals through an antenna;

a plurality of slave receiving units for mixing different receiving intermediate frequency signals with [the] sector signals of carrier frequencies received from the antenna, converting the mixed signals into multi-sector signals of different receiving intermediate frequency bands, and outputting the converted [sector] signals to [a] the same transmission line;

a master receiving unit for mixing the multi-sector signals [at] received from the plurality of slave receiving units, the multi-sector signals having been transmitted through the same transmission line from the plurality of slave receiving units and converted into different receiving intermediate frequency band signals, with different intermediate frequency band signals, separating each of the [sector] mixed multi-sector signals, converting the separated [sector] multi-sector signals into receiving carrier frequency signals, and outputting the converted signals to the base station;

a master transmitting/receiving separator for separating transmitted/received signals of the master transmitting unit from transmitted/received signals of the master receiving unit; and

a distributor for distributing [received] the mixed multi-sector signals received from the master transmitting unit to the plurality of [slave receiving] slave transmitting units, receiving the multi-sector signals of different receiving intermediate frequency bands provided [sector signals being converted into receiving intermediate frequency band signals] from the plurality of slave receiving units, and transmitting [converted sector signals] the multi-sector signals of different receiving intermediate frequency bands to the master receiving unit.

2. (Currently amended) The repeater according to claim 1, wherein the master transmitting unit comprises:

a plurality of mixing units for receiving [assigned carrier frequency sector signals] the multi-sector signals of the carrier frequency from the base station, mixing the received [sector] multi-sector signals with the different transmission intermediate frequency signals, and outputting the mixed [sector] signals; and

a plurality of amplifying units for filtering off unnecessary signals from the output signals of the mixing units, [the sector signals having been converted into different transmission intermediate frequency signals,] for amplifying the [sector] filtered signals without the unnecessary signals to a predetermined level, and for outputting the amplified signals to [a] the same transmission line.

3. (Currently amended) The repeater according to claim 2, wherein each of the mixing units comprises:

an attenuator for receiving [high frequency sector signals of an assigned carrier frequency] the multi-sector signals of the carrier frequency received from the base station, attenuating the received [high frequency sector] multi-sector signals, and outputting the attenuated [high frequency sector] multi-sector signals; and

a mixer for mixing the attenuated [carrier frequency sector] multi-sector signals [at] provided from the attenuator with signals having frequency values equal subtraction results of [subtracted] different transmission intermediate frequency band signals from the carrier frequency, and outputting the [converted sector] mixed multi-sector signals into the different transmission intermediate frequency band signals to each of the amplifying units.

4. (Currently amended) The repeater according to claim 2, wherein each of the amplifying [unit] units comprises:

a band-pass filter for filtering off the [converted sector] mixed multi-sector signals into different transmission intermediate frequency band signals provided from the mixing units; and

an amplifier for amplifying the filtered [sector] signals [through] received from the band-pass filter to a predetermined level, and outputting the amplified [sector] signals to [a] the transmission line.

5. (Currently amended) The repeater according to claim 1, wherein the slave transmitting unit comprises:

a sector signal extracting unit for extracting different transmission intermediate frequency band signals from [receiving] the [converted] mixed multi-sector signals [into different transmission intermediate frequency signals] provided from the master transmitting unit, mixing the different transmission intermediate frequency band signals into

sector signals to be extracted out of the [received] mixed multi-sector signals with signals having [subtracted] frequency values equal subtraction results of a predetermined value from the transmission intermediate frequency signals, and extracting the sector signals; and

a high frequency signal generating unit for converting the extracted sector signals [at] received from the sector signal extracting unit into the high frequency signals, and transmitting the converted signals through [an] the antenna.

6. (Currently amended) The repeater according to claim 5, wherein the sector signal extracting unit comprises:

a first band-pass filter for filtering off the multi-sector signals having been converted [to] into the different transmission intermediate frequency band signals provided from the master transmitting unit;

a mixer for receiving the filtered multi-sector signals from the first band-pass filter, mixing the filtered multi-sector signals into sector signals to be extracted out of the multi-sector signals with signals having [subtracted] frequency values equal subtraction results of [a] the predetermined value from the [mixed] transmission intermediate frequency signals, and outputting the mixed signals; and

a second band-pass filter for filtering off the output signals of the mixer, and extracting a desired sector signal.

7. (Currently amended) The repeater according to claim 5, wherein the high frequency signal generating unit comprises:

a high frequency generator for generating the high frequency signals by mixing the sector signals extracted through the sector signal extracting unit with signals having [subtracted] frequency values equal subtraction results of a predetermined value from the [base station] carrier frequency; and

a power amplifier for amplifying power of the high frequency signals provided by the high frequency generator, and transmitting the amplified signals through [an] the antenna.

8. (Currently amended) The repeater according to claim 1, wherein the slave receiving unit comprises:

an intermediate frequency generating unit for generating intermediate frequency signals by mixing [receive carrier frequency sector signals] the received sector signals of carrier frequencies provided through the antenna with the assigned [receive] receiving intermediate frequency signals; and

an amplifier for filtering off the intermediate frequency signals generated by the intermediate frequency generating unit, and amplifying the filtered intermediate frequency signals to a predetermined level.

9. (Currently amended) The repeater according to claim 8, wherein the intermediate frequency generating unit comprises:

an amplifier for amplifying [receive carrier frequency sector signals] the received sector signals of carrier frequencies provided through the antenna to a predetermined level;

a band-pass filter for filtering the [receive carrier frequency sector signals] received sector signals of carrier frequencies being amplified by the amplifier; and

a mixer for mixing filtered [receive carrier frequency sector signals] sector signals of carrier frequencies provided from the band-pass filter with signals having [subtracted] frequency values equal the intermediate frequency signals from a receive carrier frequency.

10. (Currently amended) The repeater according to claim 8, wherein the amplifying unit comprises:

an amplifier for amplifying the intermediate frequency [band sector] signals provided by the intermediate frequency generating unit to a predetermined level; and

a band-pass filter for filtering off the amplified intermediate frequency [band sector] signals from the amplifier, and transmitting the filtered signals to the master receiving unit.

11. (Currently amended) The repeater according to claim 1, wherein the master receiving unit comprises:

a plurality of sector signal separating units for [receiving converted] extracting the multi-sector signals into the different [receive] receiving intermediate frequency band signals provided from the plurality of slave receiving units, mixing the receiving intermediate frequency band signals into sector signals to be extracted with signals having [subtracted] frequency values equal subtraction results of a predetermined value from the mixed [receive] receiving intermediate frequency band signals, and separating the sector signals to be extracted; and

a plurality of high frequency generating units for receiving the separated sector signals from the sector signal separating unit, mixing the separated sector signals into receive intermediate frequency band signals with signals having [subtracted] frequency value equal subtraction results of a predetermined value from a receive carrier frequency, converting the receive intermediate frequency band signals to [receive] the receiving carrier frequency [band] signals, and outputting the converted signals to the base station.

12. (Currently amended) The repeater according to claim 11, wherein the sector signal separating unit comprises:

a mixer for [receiving converted] extracting the multi-sector signals into the different [receive] receiving intermediate frequency band signals provided from the plurality of slave receiving units, for mixing the receiving intermediate

frequency band signals into sector signals to be extracted with signals having [subtracted] frequency values equal subtraction results of a predetermined value from the [mixed receive] receiving intermediate frequency signals, and outputting the mixed signals; and

a band-pass filter for receiving the mixed signals from the mixer, performing band-pass filtering the mixed signal around the predetermined value into the sector signals, and separating the sector signals to be extracted.

13. (Currently amended) The repeater according to claim 11, wherein the high frequency generating unit comprises:

a mixer for receiving the separated sector signals from the sector signal separating unit, mixing the sector signals into receive intermediate frequency band signals with frequency signals having [subtracted] frequency values equal subtraction results of a predetermined value from a receive carrier frequency, converting the receive intermediate frequency band signals to [receive] the receiving carrier frequency band signals, and outputting converted signals; and an amplifier for amplifying the [receive] receiving carrier frequency band signals output from the mixer to a predetermined level.

14. (Currently amended) Apparatus for transmitting sector signals in a multi-sector in-building repeater, the apparatus comprising:

a master transmitting unit for receiving multi-sector signals of a carrier frequency from a base station, mixing the multi-sector signals with different transmission intermediate frequency signals, and outputting the mixed multi-sector signals to a same transmission line;

a plurality of slave transmitting units, each of which receives the mixed multi-sector signals, for extracting sector signals assigned to the multi-sector signals from the [master transmitting unit] transmission line, converting the extracted sector signals into high frequency signals, and transmitting [converted] the high frequency signals through an antenna.

15. (Currently amended) The apparatus according to claim 14, wherein the master transmitting unit comprises:

a plurality of mixing units for receiving [assigned carrier frequency sector signals] the multi-sector signals of the carrier frequency from the base station, mixing the received [sector] multi-sector signals with the different transmission intermediate frequency signals, and outputting the mixed sector signals; and

a plurality of amplifying units for filtering off unnecessary signals [output signals of] from the mixed multi-sector signals outputted from the mixing units, [the sector signals having been converted into different transmission intermediate frequency signals,] for amplifying the [sector] filtered signals without the unnecessary signals to a predetermined level, and for outputting amplified signals to a same transmission line.

16. (Currently amended) The apparatus according to claim 15, wherein each of the mixing units comprises:

an attenuator for [receiving] extracting the multi-sector signals of the carrier frequency into high frequency sector signals of an assigned carrier frequency from the base station, attenuating the [received] high frequency sector signals, and outputting the attenuated high frequency sector signals; and

a mixer for mixing the attenuated [carrier] high frequency sector signals [at] received from the attenuator with signals having [subtracted] frequency values equal subtraction results of the different transmission intermediate frequency band signals from the carrier frequency, and outputting [converted sector] the mixed signals into the different transmission intermediate frequency band signals to each of the amplifying units.

17. (Currently amended) Apparatus for receiving sector signal in a multi-sector in-building repeater, the apparatus comprising:

a plurality of slave receiving units for mixing different receiving intermediate frequency signals with [the] sector signals of carrier frequencies received from [the] an antenna, converting the mixed signals into multi-sector signals of different receiving intermediate frequency bands, and outputting the converted [sector] signals to a same transmission line;

a master receiving unit for mixing the multi-sector signals [at] provided from the plurality of slave receiving units, the multi-sector signals having been transmitted through the same transmission line from the plurality of slave receiving units and converted into different receiving intermediate frequency band signals, with different intermediate frequency band signals, separating each of the [sector signals] different intermediate frequency band signals, converting the separated [sector] signals into receiving carrier frequency signals, and outputting the converted signals to [the] a base station;

a distributor for distributing received multi-sector signals to the plurality of [slave receiving] slave transmitting units, receiving [sector signals being converted into receiving intermediate frequency band signals] the multi-sector signals of different receiving intermediate frequency bands from the plurality of slave receiving units, and transmitting [converted sector signals] the multi-sector signals of different receiving intermediate frequency bands to the master receiving unit.

18. (Currently amended) The apparatus according to claim 17, wherein the slave receiving unit comprises:

an intermediate frequency generating unit for generating intermediate frequency signals by mixing [receive carrier

frequency sector signals] the sector signals of carrier frequencies provided through the antenna with the assigned [receive] receiving intermediate frequency signals; and

an amplifier for filtering off the intermediate frequency signals generated by the intermediate frequency generating unit, and amplifying the filtered intermediate frequency signals to a predetermined level.

19. (Currently amended) The apparatus according to claim 18, wherein the intermediate frequency generating unit comprises:

an amplifier for amplifying [receive carrier frequency sector signals] the sector signals of carrier frequencies provided through the antenna to a predetermined level;

a band-pass filter for filtering the [receive carrier frequency] sector signals being amplified by the amplifier; and

a mixer for mixing the filtered [receive carrier frequency] sector signals provided from the band-pass filter with signals having [subtracted] frequency values equal subtraction results of the intermediate frequency signals from a receive carrier frequency.

20. (Currently amended) A method of providing signals from a base station to multiple sectors in a building utilizing a multi-sector in-building repeater, comprising:

attenuating and amplifying a plurality of sector signals of a carrier frequency received from the base station;

mixing each of the attenuated and amplified sector signals with corresponding different transmission intermediate frequency signals, and outputting each of the mixed sector signals to a same transmission line via a first duplexer;

distributing the mixed sector signals [of] received from the same transmission line to a plurality of slave transmitting units disposed at respective ones of the multiple sectors;

extracting sector signals in each of the multiple sectors from the mixed sector signals by utilizing different intermediate frequency signals assigned to respective ones of the slave transmitting units;

converting the extracted sector signals into high frequency signals, and transmitting the [converted] high frequency signals via a second duplexer through respective antennas, disposed within each of the multiple sectors.

21. (Currently amended) The method as set forth in claim 20, further comprising:

generating, in each of a plurality of slave receiving units, intermediate frequency signals by mixing receive carrier frequency sector signals provided through the antenna and the second duplexer, with assigned receive intermediate frequency signals;

outputting the intermediate frequency signals of each slave receiving unit to said first duplexer via said same transmission line;

converting the intermediate frequency signals of each slave receiving unit, [output] outputted by the first duplexer, to different carrier frequency signals for transmission to said base station. .

## Summary of Record of Interview Requirements

### Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

### Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

#### Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

#### 37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,  
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

### Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.